Spectrum Technology Platform

Version 9.0 SP1

Geocode Africa - REST

Pitney Bowes Software

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GeocodeAddressGlobal for Africa

The GeocodeAddressGlobal with the Africa database provides street-level geocoding for many African countries. It can also determine city or locality centroids, as well as postal code centroids for selected countries.

These African countries comprise the XA1 database. Enterprise Geocoding Module Data Release Announcements will list and describe the countries included with the Africa database.

Note: South Africa is licensed as a separate database and is not part of the Africa database. Also Egypt is included with the Middle East database, not the Africa database.

The Africa database is an optional part of the Enterprise Geocoding Module. For more information about Enterprise Geocoding Module, including a listing of other components included with it, see **What is the Enterprise Geocoding Module?**.

In this section:

Input

GeocodeAddressGlobal with the Africa database takes an address as input. To obtain the best performance and the most possible matches, your input address lists should be as complete as possible, free of misspellings and incomplete addresses, and as close to postal authority standards as possible. Most postal authorities have websites that contain information about address standards for their particular country.

Input Fields

To obtain the best performance and the most possible matches, your input address lists should be as complete as possible, free of misspellings and incomplete addresses, and as close to postal authority standards as possible. Most postal authorities have websites that contain information about address standards for their particular country.

The following table lists the input fields used for geocoding locations in Africa.

Table 1: Input Fields for Africa

Parameter	Description
Data.AddressLine1	One of the following: • The address line containing the street name and building number, if available. For example: **Rua Jose Anchieta** Luanda **Boulevard Du 28 Novembre** Bujumbura **Rue 1823** Cotonou **Rue 28.263** Ouagadougou **Kushimbara Road** Gaborone **Avenue du Docteur Jamot** Douala **Boulevard Patrice Lumumba** Kinshasa **Avenue Coutassi** Brazzaville **Avenue Gabriel Lendoye** Libreville **Mamleshie Road** Accra **Taratibu Street** Mombasa

Parameter	Description
	Mpilo Road Maseru **Avenue Moukhtar Soussi** 28630 Ain Harrouda **Rue 97** Bamako **Avenida 24 De Julho** Maputo **Rue Ely ould Mohamed** Nouakchott **Victor Hugo Street** Beau Bassin **Presidential Way** Lilongwe **Katanga Street** Swakopmund **Avenue de l'Afrique** Niamey **Limpopo Street** Abuja **Avenue De La Gendarmerie** Kigali **Rue GY 501** Dakar **Mbangweni Street** Mbabane **De La Marina Boulevard** Lomé **Rue Aflatoun** Ben Arous **Kiyungi Street** Dar es Salaam **Rubaga Road** Kampala **Freedom Way** Kitwe **Skirwith Road** Bulawayo • This field can also contain the full address. For more information, see **Single Line Input** on page 12
Data.AddressLine2	This field is not used with countries included with the Africa database (Product Code XA1), Middle East database (Product Code XM1), or

Parameter	Description
	Latin America database (Product Code XL1). The countries included in these databases generally have less comprehensive address coverage.
Data.City	The city or town name. Your input address should use the official city name.
Data.Country	The meaning of county varies by country. The majority of countries in the Africa database (XA1) do not use a county or equivalent as part of an address. • AGO (Angola)—Not used • BDI (Burundi)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used This field is not used with countries included with the African database (Product Code XA1). These African countries generally have less comprehensive address coverage.
Data.FirmName	This field is not used with countries included with the African database (Product Code XA1). These countries generally have less comprehensive address coverage.
Data.HouseNumber	The building number. You may get better parsing results for some countries if you put the house number in this field instead of AddressLine1. Not every country includes house number data.

Parameter	Description
	The Africa and Middle East countries do not generally have house numbers in the data source. **Note:** The house number specified in the HouseNumber field takes precedence over any house number specified in the AddressLine1 field.
Data.LastLine	The last line of the address. • Rua Jose Anchieta **Luanda** Boulevard Du 28 Novembre **Bujumbura** Rue 1823 **Cotonou** Rue 28.263 **Ouagadougou** Kushimbara Road **Gaborone** Avenue du Docteur Jamot **Douala** Boulevard Patrice Lumumba **Kinshasa** Avenue Coutassi **Brazzaville** Avenue Gabriel Lendoye **Libreville** Mamleshie Road **Accra** Taratibu Street **Mombasa** Avenue Moukhtar Soussi **28630 Ain Harrouda** Rue 97 **Bamako** Avenida 24 De Julho **Maputo** Rue Ely ould Mohamed **Nouakchott** Victor Hugo Street **Beau Bassin** Presidential Way **Lilongwe** Katanga Street **Swakopmund**

Parameter	Description
	Avenue de l'Afrique **Niamey** Limpopo Street **Abuja** Avenue De La Gendarmerie **Kigali** Rue GY 501 **Dakar** Mbangweni Street **Mbabane** De La Marina Boulevard **Lomé** Rue Aflatoun **Ben Arous** Kiyungi Street **Dar es Salaam** Rubaga Road **Kampala** Freedom Way **Kitwe** Kirwith Road **Bulawayo**
Data.Locality	The meaning of locality varies by country: Africa, Middle East, and Latin America countries do not use a locality or equivalent as part of an address. However there is no penalty if state/province is used in input address. • AGO (Angola)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used

Parameter	Description
	• NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used
Data.PostalCode	The postal code in the appropriate format for the country. Countries in the Africa and Middle East databases generally do not have postal code data. Most countries in the Latin America database do not have postal code data, although several do have limited postal coverage.
Data.StateProvince	The meaning of State/Province varies by country. Countries in the Africa, Middle East, and Latin America databases do not use a state/province or equivalent as part of an address. However there is no penalty if state/province is used in input address. • AGO (Angola)—Not used • BEN (Benin)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used

Address Guidelines for Africa

GeocodeAddressGlobal with the Africa database provides street-level, city, or geographic geocoding for many African countries. These countries comprise the Africa database (Product Code XA1).

Follow these guidelines to provide input that GeocodeAddressGlobal can successfully geocode African addresses.

- **Required fields**—Addresses must contain a city.
- **Supported languages**—The geocoder supports the official language for each country.
- **Thoroughfare types**—Thoroughfare types and their common abbreviations are recognized and fully supported on input and output.
- **Common words and abbreviations**—The geocoder recognizes common words, directionals, house number indicators, and abbreviations used in addresses and can geocode these addresses successfully.

Note: Postal geocoding is generally not available with the African database. Morocco (MAR) is the only country in the XA1 Africa database that has postal code data, and therefore the only country in this database that supports postal geocoding.

If the input includes a state/province or locality and that input is matched, it does contribute to a higher candidate ranking. However, there is no penalty if state/province or locality is omitted or unmatched.

Single Line Input

Instead of entering each address element in separate fields, you may enter the entire address in the AddressLine1 input field.

For all countries except Japan, you can enter addresses in one or more of these single-line formats.

Note: Not all formats work may work for every country.

```
StreetAddress;PostalCode;City
```

```
StreetAddress;City;PostalCode
```

```
StreetAddress;City
```

```
StreetAddress;City;StateProvince;PostalCode
```

```
StreetAddress;Locality
```

```
StreetAddress;County;City
```

```
PostalCode;StreetAddress
```

```
PostalCode;StreetAddress;City
```

```
City;PostalCode;StreetAddress
```

- *StreetAddress* can be house number and street name in either order (with street type immediately before or after the street name).
- *City* is the city or town.
- *Locality* is the locality name.
- *County* is the county name.
- *StateProvince* is the postal abbreviation for the state or province.
- *PostalCode* is the complete postcode.

Other single-line formats may also be acceptable for many countries.

The matching accuracy for single line input is comparable to that of structured address input. The performance of single line input addresses may be slightly slower than that of structured address input.

```
Rua JOSE Anchieta;Luanda
```

```
Boulevard Du 28 Novembre;Bujumbura
Rue 1823; Cotonou
Rue 28.263 Ouagadougou
Kushimbara Road;Gaborone
Avenue du Docteur Jamot;Douala
Boulevard Patrice Lumumba;Kinshasa
Avenue Coutassi;Brazzaville
Avenue Gabriel Lendoye;Libreville
Taratibu Street;Mombasa
Mpilo Road; Maseru
Avenue Moukhtar Soussi; 28630 Ain Harrouda
Rue 97;Bamako
Avenida 24 De Julho;Maputo
Rue Ely ould Mohamed;Nouakchott
Victor Hugo Street Beau;Bassin
Presidential Way;Lilongwe
Katanga Street;Swakopmund
Avenue de I'Afrique;Niamey
Limpopo Street;Abuja
Avenue De La Gendarmerie;Kigali
Rue GY 501; Dakar
Mbangweni Street; Mbabane
De La Marina Boulevard;Lomé
Rue Aflatoun Ben;Arous
Kiyungi Street;Dar es Salaam
Rubaga Road; Kampala
Freedom Way, Kitwe
Kirwith Road, Bulawayo
```

Punctuation is ignored for geocoding purposes.

Guidelines for Single Line Input

- Punctuation is generally ignored, however you may improve results and performance by using separators (commas, semicolons, etc.) between different address elements.
- The country is not required. Each country geocoder assumes that the address is in its country.
- Firm information (placename, building name, or government building) is returned if available.

Options

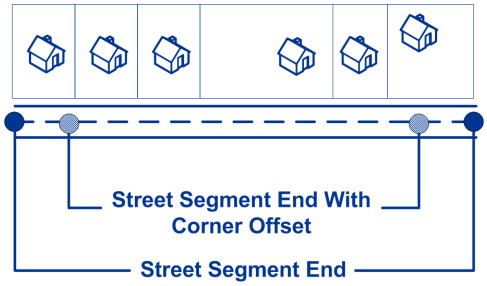
GeocodeAddressGlobal allows you to set default processing options through the Management Console. You can override certain settings for individual calls to GeocodeAddressGlobal using the API or Spectrum™ Technology Platform client tools, such as Enterprise Designer.

Geocoding Options

The following table lists the options that control how a location's coordinates are determined.

Table 2: Geocoding Options for Africa

Parameter	Description	
Option.GeocodeLevel	Specifies how precisely you want to geocode addresses. One of the following:	
	StreetAddress	The geocoder attempts to geocode addresses to a street address, but some matches may end up at a less precise location such as a postal code centroid, intersection, or shape path.
	PostalCentroid	The majority of African countries and Middle Eastern countries do not include postal code data, and therefore do not support postal centroid geocoding.
	GeographicCentroid	The geocoder attempts to geocode addresses to the geographic centroid of a city or state.
Option.Interpolation	This option is available for selected countries only.	
	Y	Yes, perform address point interpolation.
	N	No, do not perform address point interpolation.
Option.FallbackToGeographic	Specifies whether to attempt to determine a geographic region centroid when an address-level geocode cannot be determined.	
	Y	Yes, determine a geographic centroid when an address-level centroid cannot be determined. Default.
	N	No, do not determine a geographic centroid when an address-level centroid cannot be determined.
Option.FallbackToPostal	**Y**	Yes, determine a postal code centroid when an address-level centroid cannot be determined. Default.
	N	No, do not determine a postal code centroid when an address-level centroid cannot be determined.
Option.OffsetFromCorner	Specifies the distance to offset the street end points in street-level matching. The distance is specified in the units you specify in the OffsetUnits option.This value is used to prevent addresses at street corners from being given the same geocode as the intersection. The default value varies by country:	

Parameter	Description
	• 7 meters—For most supported countries, the default offset is 7 meters. The following diagram compares the end points of a street to offset end points. 
Option.CoordinateSystem	A coordinate system is a reference system for the unique location of a point in space. Cartesian (planar) and Geodetic (geographical) coordinates are examples of reference systems based on Euclidean geometry. Spectrum™ Technology Platform supports systems recognized by the European Petroleum Survey Group (EPSG). Each country supports different coordinate systems. Depending on the country, you have one or more of the following options:

Matching Options

Matching options let you set match restrictions, fallback, and multiple match settings so that the matching can be as strict or relaxed as you need. The strictest matching conditions require an exact match on house number, street name, postal code and no fallback to postal code centroids. The geocoder looks for an exact street address match within the postal code in the input address. Relaxing the conditions broadens the area in which it searches for a match. For example, by relaxing the postal code, the geocoder searches for candidates outside the postal code but within the city of your input address.

Table 3: Matching Options for Africa

Parameter	Description
Option.KeepMultimatch	Specifies whether to return results when the address matches to multiple candidates in the database. If this option is not selected, an address that results in multiple candidates will fail to geocode. If you select this option, specify the maximum number of candidates to return **Y** Yes, return candidates when multiple candidates are found. Default. **N** No, do not return candidates. Addresses that result in multiple candidates will fail to geocode.
Option.MaxCandidates	If you specify KeepMultimatch=Y, this option specifies the maximum number of results to return. The default is 1. Specify -1 (minus one) to return all possible candidates.

Parameter	Description
Option.ReturnRanges	Specifies whether to return address range information. If you enable this option, the output field `Ranges` will be included in the output. A range is a series of addresses along a street segment. For example, 5400-5499 Main St. is an address range representing addresses in the 5400 block of Main St. A range may represent just odd or even addresses within a segment, or both odd and even addresses. A range may also represent a single building with multiple units, such as an apartment building. **Y** Yes, return address range information. **N** No, do not return address range information. Default.
Option.MaxRanges	If you choose to return ranges, this option specifies the maximum number of ranges to return for each candidate. Since the geocoder returns one candidate per segment, and since a segment may contain multiple ranges, this option allows you to see the other ranges in a candidate's segment.
Option.MaxRangeUnits	If you choose to return ranges, this option specifies the maximum number of units (for example, apartments or suites) to return for each range. For example, if you were to geocode an office building at 65 Main St. containing four suites, there would be a maximum of four units returned for the building's range (65 Suite 1, 65 Suite 2, 65 Suite 3, and 65 Suite 4. If you were to specify a maximum number of units as 2, then only two units would be returned instead of all four.
Option.CloseMatchesOnly	Specifies whether to return only those geocoded results that are close match candidates. For example, if there are 10 candidates and two of them are close candidates, and you enable this option, only the two close matching candidates would be returned instead of all 10. To specify what is considered a close match, use the options. Address candidates are ranked according to how closely the input address matches these preferences. **Y** Yes, return only close matches. **N** No, do not return only close matches. Default.
Option.MatchMode	Specifies how to determine whether a candidate is a close match. One of the following: **CustomMode** This option allows you to specify which parts of a candidate address must match the input address to be considered a close match. Use the to specify the address elements you want. **RelaxedMode** All candidate addresses are considered a close match.
Option.MustMatchInput	Specifies whether candidates must match all non-blank input fields to be considered a close match. For example, if an input address contains a city and postal code, then candidates for this address must match the city and postal code to be considered a close match. **Y** Yes, a candidate must match all input to be considered a close match.

Parameter	Description
	N No, a candidate does not have to match all input to be considered a close match. Default.
Option.MustMatchHouseNumber	The Africa and Middle East countries do not generally have house numbers in the data source. **Y** Yes, a candidate must match the house number to be considered a close match. **N** No, a candidate does not have to match the house number to be considered a close match.
Option.MustMatchStreet	**Y** Yes, a candidate must match the street name to be considered a close match. **N** No, a candidate does not have to match the street name to be considered a close match.
Option.MustMatchLocality	The majority of African and Middle East countries do not use locality or equivalent as part of an address. If a locality is matched it can contribute to a higher candidate ranking, but there is no penalty if locality is omitted or unmatched. • AGO (Angola)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used

Parameter	Description
	Y Yes, a candidate must match the locality to be considered a close match. **N** No, a candidate does not have to match the locality to be considered a close match.
Option.MustMatchCity	**Y** Yes, a candidate must match the city to be considered a close match. **N** No, a candidate does not have to match the city to be considered a close match.
Option.MustMatchCounty	Specifies whether candidates must match the county (or equivalent) to be considered a close match. The meaning of county varies for different countries. • AGO (Angola)—Not used • BDI (Burundi)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used One of the following: **Y** Yes, a candidate must match the county to be considered a close match. **N** No, a candidate does not have to match the county to be considered a close match.

Parameter	Description
Option.MustMatchStateProvince	Specifies whether candidates must match the state or province (or equivalent) to be considered a close match. The majority of African and Middle East countries do not use a state/province or equivalent as part of an address. If a state/province is matched it can contribute to a higher candidate ranking, but there is no penalty if state/province is omitted or unmatched. • AGO (Angola)—Not used • BEN (Benin)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used One of the following: **Y** Yes, a candidate must match the state or province to be considered a close match. **N** No, a candidate does not have to match the state or province to be considered a close match.
Option.MustMatchPostalCode	The majority of African countries and Middle Eastern countries do not include postal code data, and therefore do not support postal centroid geocoding. **Y** Yes, a candidate must match the postal code to be considered a close match. **N** No, a candidate does not have to match the postal code to be considered a close match.

Parameter	Description
Option.SortCandidatesUsingLocale	This Reverse geocoding option that applies to Greece, Russia, Ukraine, and any other country that supports dual character sets (such as the Middle East countries). Specifies whether candidates are sorted and returned based on the input language. That is, if the input was in Russian, the Russian character candidate is returned first followed by the English language candidate. This will override the dictionary order. **Y** Yes, candidates are sorted and returned based on input language. **N** No, candidates are returned in the order that the dictionary was added to the database, regardless of input language.

You may want to use a balanced strategy between match rate and geographic precision. That is, you may want to geocode as many records as possible automatically, but at the same time want to minimize the number of weaker matches (false positives). For example, false positives can occur when the geocoder:

- finds a street that sounds like the input street.
- finds the same street in another city (if postal code match is not required).
- finds the street but with a different house number (if house number is not required).

The following settings may achieve a good balance between match rate and precision:

- **CloseMatchesOnly**—.
- **MustMatchHouseNumber**—Specify "Y".
- **MustMatchStreet**—Specify "Y".
- **FallbackToPostal**—.

Data Options

The Data tab allows you to specify which databases to use in geocoding. Databases contain the address and geocode data necessary to determine the geocode for a given address. There are two kinds of databases: standard databases and custom databases. Standard databases are those supplied by Pitney Bowes Software and based on address and geocoding data from postal authorities and suppliers of geographical data. Custom databases are databases you create to enhance or augment standard databases for your particular needs.

The following table lists the options available for specifying which databases to use and the search order of databases.

Table 4: Data Options for Africa

Parameter	Description
Option.Database	Specifies the database to be used for geocoding. Only databases that have been defined in the Databases Resources panel in the Management Console are available.
Option.DatabasePreference	Specifies which geocoding databases to use. One of the following: **PreferCustom** Use both standard databases and custom databases, but give preference to candidates from

Parameter	Description
	custom databases. Use this option if you feel your custom database is superior to the standard database. **PreferStandard** Use both standard databases and custom databases, but give preference to candidates from standard databases. **CustomOnly** Use only custom databases. Ignore standard databases. **StandardOnly** Use only standard databases. Ignore custom databases. **Both** Use both standard databases and custom databases. In cases where candidates are returned from both, the standard database is preferred. Default. The results from a custom database have a "U" at the end of the result code. Results from an address database have an "A" at the end of the match score. For example: S5HPNTSCZA is a match score that comes from an address database, while S5HPNTSCZU comes from a custom database. For more information, see **Result Codes for International Geocoding** on page 39.
Option.DatabaseSearchOrder	The name of one or more database resources to use in the search process. Use the database name specified in the Management Console's Database Resources tool. You can specify multiple database resources. If you specify more than one database, list them in order of preference. The order of the databases has an effect when there are close match candidates from different databases. The close matches that are returned come from the database that is first in the search list. Close matches from lower ranked databases are demoted to non-close matches. You can also use the order of the databases to perform fallback processing if you have an both an address point database and a street-level database installed for the country. List the address point database first and the street database second. If the address cannot be geocoded to the address point level, the geocoder will attempt to geocode it to the street level.

Output Data Options

The following table lists the options that control which data is returned in the output.

Table 5: Output Data Options

Parameter	Description
Option.ReturnOnlySimilarFirmNames	This option applies to the U.K. only. Specifies whether to return firm names only when the input firm name is similar to the firm name in the geocoding database. For example, if

Parameter	Description
	the input firm name is "Pitney Bowes Business Insight" but the geocoding database returns "Pitney Bowes Software, Inc.", these two firm names are not similar. In most cases the input firm name must match the firm name in the database exactly. Some differences in abbreviations are considered similar enough to result in the firm name being returned. **Y** Yes, return only firm names that are similar to the input firm name. **N** No, return firm names regardless of whether they are close to the input firm name. Default.

Output

The geocoder returns the latitude/longitude, standardized address, and result indicators. Result indicators describe how well the geocoder matched the input address to a known address and assigned a location; they also describe the overall status of a match attempt.

Address Output

The address may be identical to the input address if the input address was accurate, or it may be a standardized version of the input address, or it may be a candidate address when multiple matches are found.

Table 6: Address Output for Africa

Response Element	Description
AddressLine1	First line of the address.
AddressLine2	Second line of the address.
ApartmentLabel	The type of unit, such as apartment, suite, or lot.
ApartmentNumber	Unit number.
City	The name.
Country	The three-letter ISO 3166-1 Alpha 3 country code.
Data.Country	The meaning of county varies by country. The majority of countries in the Africa database (XA1) do not use a county or equivalent as part of an address. • AGO (Angola)—Not used • BDI (Burundi)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used

Response Element	Description
	• COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used This field is not used with countries included with the African database (Product Code XA1). These African countries generally have less comprehensive address coverage.
FirmName	Name of the company or a place name.
HouseNumber	The number for the matched location.
HouseNumberHigh	The highest house number of the range in which the address resides.
HouseNumberLow	The lowest house number of the range in which the address resides.
HouseNumberParity	Indicates if the house number range contains even or odd numbers or both. **E** Even **O** Odd **B** Both **U** Unknown
Language	For reverse geocoded candidates, the two-character language code is returned.
LastLine	Complete last address line (city, state/province, and postal code).
LeadingDirectional	Street directional that precedes the street name. For example, the N in 138 N Main Street.
Data.Locality	The meaning of locality varies by country:

Response Element	Description
	Africa, Middle East, and Latin America countries do not use a locality or equivalent as part of an address. However there is no penalty if state/province is used in input address. • AGO (Angola)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used
NumberOfCandidateRanges	Indicates the number of ranges of which the candidate is a member. A candidate may be a part of multiple ranges if the candidate is a street instead of a building.
NumberOfRangeUnits	Indicates the number of units included in the range. A unit is an address within a building, such as an apartment or office suite.
PostalCode	The postcode for the address. The format of the postcode varies by country. Postcode data is not available for every country.
PostalCode.Addon	The second part of a postcode. This field is not used by most countries.
PreAddress	Miscellaneous information that appears before the street name.
PrivateMailbox	This field is not currently used.
Ranges	This is a list field containing the address ranges that exist on the street segment where the candidate address is located. A range is a series of addresses along a street segment. For example, 5400-5499 Main St. is an address range representing addresses in the

Response Element	Description
	5400 block of Main St. A range may represent just odd or even addresses within a segment, or both odd and even addresses. A range may also represent a single building with multiple units, such as an apartment building. The Ranges field contains the following sub-fields: **Address** — This is a list filed that contains sub-fields for any address elements (AddressLine1, City, and so on) that are different from the candidate's address. **AdditionalFields** — A listing of country-specific information related to the address. The information contained in AdditionalFields varies by country. **HouseNumberHigh** — The highest address number for the range. **HouseNumberLow** — The lowest address number for the range. **SegmentParity** — Indicates the side of the street where the range is located. One of the following: **0** It is not known which side of the street the range is located on. **1** The range is on the left side of the street. **2** The range is on the right side of the street. **HouseNumberParity** — Indicates whether the range contains odd or even address numbers. One of the following: **0** The range contains both odd and even address numbers. **1** The range contains odd address numbers **2** The range contains even address numbers. **-1** It is not known whether the range contains odd or even house numbers. **TotalRangeUnitsReturned** — The number of unit ranges returned for the address. A unit is an address within a building, such as an apartment or suite. **RangeUnits** — A list of the ranges of units within the building. An example of units are apartments or suites. **Address** This is a list filed that contains sub-fields for any address elements (AddressLine1, City,

Response Element	Description
	and so on) that are different from the candidate's address. **UnitNumberHigh** The highest unit number. **UnitNumberLow** The lowest unit number.
SegmentCode	A unique ID that identifies .
SegmentParity	Indicates which side of the street has odd numbers. **L** Left side of the street **R** Right side of the street **B** Both sides of the street **U** Undetermined
Data.StateProvince	The meaning of State/Province varies by country. Countries in the Africa, Middle East, and Latin America databases do not use a state/province or equivalent as part of an address. However there is no penalty if state/province is used in input address. • AGO (Angola)—Not used • BEN (Benin)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used

Response Element	Description
StreetDataType	The default search order rank of the database used to geocode the address. A value of "1" indicates that the database is first in the default search order, "2" indicates that the database is second in the default search order, and so on. The default database search order is specified in the Management Console with the Database Resources tool.
StreetName	For most countries, this contains the street name.
StreetPrefix	The type of street when the street type appears before the base street name.
StreetSuffix	The street type of the matched location. For example, AVE for Avenue.
TrailingDirectional	Street directional that follows the street name.
UnitNumberHigh	The highest unit number of the range in which the unit resides.
UnitNumberLow	The lowest unit number of the range in which the unit resides.

Geocode Output

Table 7: Geocode Output for Africa

Response Element	Description
CoordinateSystem	The coordinate system used to determine the latitude and longitude coordinates. A coordinate system specifies a map projection, coordinate units, etc. An example is EPSG:4326. EPSG stands for European Petroleum Survey Group.
Latitude	Seven-digit number in degrees and calculated to four decimal places (in the format specified).
Longitude	Seven-digit number in degrees and calculated to four decimal places (in the format specified).

Result Codes

Result codes contain information about the success or failure of the geocoding attempt, as well as information about the accuracy of the geocode.

Table 8: Result Code Output for Africa

Response Element	Description
Geocoder.MatchCode	Indicates how closely the input address matches the candidate address.
IsCloseMatch	Indicates whether or not the address is considered a close match. An address is considered close based on the "Close match criteria" options on the Matching tab.

Response Element	Description
	Y Yes, the address is a close match. **N** No, the address is not a close match.
MultiMatchCount	For street address geocoding, the number of matching address positions found for the specified address. For intersection geocoding, the number of matching street intersection positions found for the specified addresses.
Status	Reports the success or failure of the match attempt **null** Success **F** Failure
Status.Code	If the geocoder could not process the address, this field will show the reason. • Internal System Error • No Geocode Found • Insufficient Input Data • Multiple Matches Found • Exception occurred • Unable to initialize Geocoder • No Match Found
Status.Description	If the geocoder could not process the address, this field will show a description of the failure. **Problem + explanation** Returned when Status.Code = Internal System Error. **Geocoding Failed** Returned when Status.code = No Geocode Found. **No location returned** Returned when Status.code = No Geocode Found. **No Candidates Returned** The geocoder could not identify any candidate matches for the address. **Multiple Candidates Returned and Keep Multiple Matches not selected** The address resulted in multiple candidates. In order for the candidate address to be returned, you must.
LocationPrecision	A code describing the precision of the geocode. One of the following: **0** No coordinate information is available for this candidate address. **1** Interpolated street address. **2** Street segment midpoint. **3** Postal code 1 centroid. **4** Partial postal code 2 centroid. **5** Postal code 2 centroid.

Response Element	Description	
	6	Intersection.
	7	Point of interest.
	8	State/province centroid.
	9	County centroid.
	10	City centroid.
	11	Locality centroid.
	12 - 15 (LocationPrecision codes)	For most countries, LocationPrecision codes 12 through 15 are reserved for unspecified custom items.
	16	The result is an Address Point.
	17	The result was generated by using address point data to modify the candidates segment data.
StreetDataType	The default search order rank of the database used to geocode the address. A value of "1" indicates that the database is first in the default search order, "2" indicates that the database is second in the default search order, and so on. The default database search order is specified in the Management Console with the Database Resources tool.	

2

ReverseGeocodeAddressGlobal

ReverseGeocodeAddressGlobal determines the address for a given latitude/longitude point. ReverseGeocodeAddressGlobal can determine addresses in many countries. The countries available to you depends on which country databases you have installed. For example, if you have databases for Canada, Italy, and Australia installed, ReverseGeocodeAddressGlobal would be able to geocode addresses in these countries in a single stage.

Note: ReverseGeocodeAddressGlobal does not support U.S. addresses. To geocode U.S. addresses, use ReverseGeocodeUSLocation.

Before you can work with ReverseGeocodeAddressGlobal, you must define a global database resource containing a database for one or more countries. Once you create the database resource, a ReverseGeocodeAddressGlobal will become available in the Management Console, Enterprise Designer, and Interactive Driver.

ReverseGeocodeAddressGlobal is an optional component of the Enterprise Geocoding Module.

In this section:

Input

ReverseGeocodeAddressGlobal takes longitude and latitude as input.

Table 9: ReverseGeocodeGlobal Input

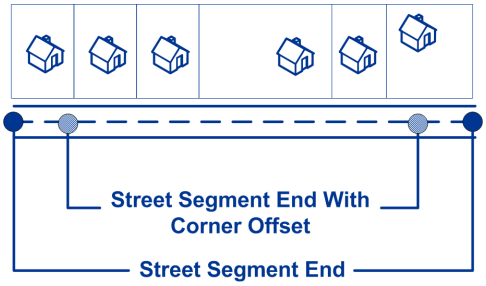
Parameter	Format	Description
Data.Latitude	String	The latitude of the point for which you want address information.
Data.Longitude	String	The longitude of the point for which you want address information.
Data.Country	String	One of the following: • The name of the country in English. • The two-character ISO 3116-1 alpha-2 country code. • The three-character ISO 3116-1 alpha-3 country code.

Options

Geocoding Options

Table 10: Geocoding Options for Africa

Parameter	Description
Option.SearchDistance	The radius from the input coordinates in which to search for an address. Street segments and points within the radius are considered. The default search radius is 150 meters and the maximum search radius is 1600 meters.
Option.Units	The units in which the search distance is specified. One of the following: • Feet • Miles • Meters • Kilometers
Option.OffsetFromCorner	Specifies the distance to offset the street end points in street-level matching. The distance is specified in the units you specify in the OffsetUnits option.This value is used to prevent addresses at street corners from being given the same geocode as the intersection. The default value varies by country: • 7 meters—For most supported countries, the default offset is 7 meters.

Parameter	Description
	The following diagram compares the end points of a street to offset end points. 
Option.CoordinateSystem	A coordinate system is a reference system for the unique location of a point in space. Cartesian (planar) and Geodetic (geographical) coordinates are examples of reference systems based on Euclidean geometry. Spectrum™ Technology Platform supports systems recognized by the European Petroleum Survey Group (EPSG). Each country supports different coordinate systems. Depending on the country, you have one or more of the following options:

Matching Options

Table 11: Matching Options for Africa

Parameter	Description
Option.KeepMultimatch	Specifies whether to return results when the coordinates match to multiple candidate addresses in the database. If this option is not selected, coordinates that results in multiple address candidates will fail to geocode. If you select this option, specify the maximum number of candidates to return using the Option.MaxCandidates option (see below). **Y** Yes, return candidates when multiple candidates are found. Default. **N** No, do not return candidates. Addresses that result in multiple candidates will fail to geocode.
Option.SortCandidatesUsingLocale	This Reverse geocoding option that applies to Greece, Russia, Ukraine, and any other country that supports dual character sets (such as the Middle East countries). Specifies whether candidates are sorted and returned based on the input language. That is, if the input was in Russian, the Russian character candidate is returned first followed by the English language candidate. This will override the dictionary order. **Y** Yes, candidates are sorted and returned based on input language. **N** No, candidates are returned in the order that the dictionary was added to the database, regardless of input language.

Data Options

The Data tab allows you to specify which databases to use in reverse geocoding. Databases contain the address and geocode data necessary to determine the address for a given point. The following table lists the options available for specifying the search order of databases.

Table 12: Data Options for Africa

Parameter	Description
Option.DatabaseSearchOrder	The name of one or more database resources to use in the search process. Use the database name specified in the Management Console's Database Resources tool. You can specify multiple database resources. If you specify more than one database, list them in order of preference. The order of the databases has an effect when there are close match candidates from different databases. The close matches that are returned come from the database that is first in the search list. Close matches from lower ranked databases are demoted to non-close matches. You can also use the order of the databases to perform fallback processing if you have an both an address point database and a street-level database installed for the country. List the address point database first and the street database second. If the address cannot be geocoded to the address point level, the geocoder will attempt to geocode it to the street level.

Output

Table 13: Reverse Geocode Address Global Output Fields

Response Element	Description
AddressLine1	First line of the address.
AddressLine2	Second line of the address.
ApartmentLabel	The type of unit, such as apartment, suite, or lot.
ApartmentNumber	Unit number.
City	The name.
Data.Country	The meaning of county varies by country. The majority of countries in the Africa database (XA1) do not use a county or equivalent as part of an address. • AGO (Angola)—Not used • BDI (Burundi)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used

Response Element	Description
	• BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used This field is not used with countries included with the African database (Product Code XA1). These African countries generally have less comprehensive address coverage.
Distance	The distance from input location in meters. If the input coordinates are an exact match for the address, the value is 0.
FirmName	Name of the company or a place name.
Geocoder.MatchCode	Indicates how closely the input coordinates match the candidate address. For more information, see **Reverse Geocoding Codes (R Codes)** on page 42.
HouseNumber	The number for the matched location.
HouseNumberHigh	The highest house number of the range in which the address resides.
HouseNumberLow	The lowest house number of the range in which the address resides.
HouseNumberParity	Indicates if the house number range contains even or odd numbers or both. **E** Even **O** Odd **B** Both **U** Unknown

Response Element	Description
Language	For reverse geocoded candidates, the two-character language code is returned.
LastLine	Complete last address line (city, state/province, and postal code).
LeadingDirectional	Street directional that precedes the street name. For example, the N in 138 N Main Street.
Data.Locality	The meaning of locality varies by country: Africa, Middle East, and Latin America countries do not use a locality or equivalent as part of an address. However there is no penalty if state/province is used in input address. • AGO (Angola)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used
NumberOfCandidateRanges	Indicates the number of ranges of which the candidate is a member. A candidate may be a part of multiple ranges if the candidate is a street instead of a building.
NumberOfRangeUnits	Indicates the number of units included in the range. A unit is an address within a building, such as an apartment or office suite.
PostalCode	The postcode for the address. The format of the postcode varies by country. Postcode data is not available for every country.

Response Element	Description
PostalCode.Addon	The second part of a postcode. This field is not used by most countries.
PreAddress	Miscellaneous information that appears before the street name.
PrivateMailbox	This field is not currently used.
SegmentCode	A unique ID that identifies .
SegmentParity	Indicates which side of the street has odd numbers. **L** Left side of the street **R** Right side of the street **B** Both sides of the street **U** Undetermined
Data.StateProvince	The meaning of State/Province varies by country. Countries in the Africa, Middle East, and Latin America databases do not use a state/province or equivalent as part of an address. However there is no penalty if state/province is used in input address. • AGO (Angola)—Not used • BEN (Benin)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used
StreetDataType	The default search order rank of the database used to geocode the address. A value of "1" indicates that the database is first in the default

Response Element	Description
	search order, "2" indicates that the database is second in the default search order, and so on. The default database search order is specified in the Management Console with the Database Resources tool.
StreetName	For most countries, this contains the street name.
StreetPrefix	The type of street when the street type appears before the base street name.
StreetSuffix	The street type of the matched location. For example, AVE for Avenue.
TrailingDirectional	Street directional that follows the street name.
UnitNumberHigh	The highest unit number of the range in which the unit resides.
UnitNumberLow	The lowest unit number of the range in which the unit resides.

3

Result Codes for International Geocoding

Candidates returned by Spectrum geocoders return another class of return codes that are referred to as International Geocoding Result Codes. Each attempted match returns a result code in the Geocoder.MatchCode output field.

In this section:

International Street Geocoding Result Codes (S Codes)

Street level geocoded candidates return a result code beginning with the letter S. The second character in the code indicates the positional accuracy of the resulting point for the geocoded record.

Note: Not all street geocoding result codes are possible for every country or for every database.

Table 14: Street (S) Result Codes

S Result Code	Description
S1	Single close match with the point located at postal code centroid.
S3	Single close match with the point located at postal code centroid.
S4	Single close match with the point located at the street centroid. The S4 code is followed by letters and dashes indicating match precision. see **Interpreting S Result Codes** on page 40
S5	Single close match with the point located at a street address position. The S5 code is followed by letters and dashes indicating match precision. For information about these letters, see **Interpreting S Result Codes** on page 40.
S6	Single close match with the point located at centroid of geometry postal code. (For example, large buildings having their own codes.)
S7	Single match with the point located at an interpolated point along the candidate's street segment. When the potential candidate is not an address point candidate and there are no exact house number matches among other address point candidates, the S7 result is returned using address point interpolation. The point is interpolated according to the next highest or lowest address point candidate that both intersects the segment and whose house number is contained within the range of houses of the original candidate. By using known address reference points on the street segment, the S7 point can be adjusted to a more accurate position.
S8	Single close match with the point located at either the single point associated with an address point candidate or at an address point candidate that shares the same house number. No interpolation is required.
SX	Single close match with the point located at street intersection.

Interpreting S Result Codes

For S (street geocoded) international result codes, eight additional characters describe how closely the address matches an address in the database. The characters appear in the order listed in the following table. Any non-matched components are represented by a dash.

For example, the result code S5--N-SCZA represents a single close match that matched the street name, street suffix direction, town, and postcode. The dashes indicate that there was no match on house number, street prefix direction, or thoroughfare type. The match came from the Street Range Address database. This record would be geocoded at the street address position of the match candidate.

Category	Description	Example
H	House number	18
P	Street prefix direction P is present if any of these conditions are satisfied: • The candidate pre-directional matches the input pre-directional. • The candidate post-directional matches the input pre-directional after pre- and post-directionals are swapped. • The input does not have a pre-directional.	North
N	Street name	Merivale
T	Street type	St
S	Street suffix direction S in result code is present if any of these conditions are satisfied: • The candidate post-directional matches the input post-directional. • The candidate pre-directional matches the input post-directional after pre- and post-directionals are swapped. • The input does not have a post-directional.	W
C	City name	South Brisbane
Z	Postal code	4101
A, G, or U	Database type used to obtain the match. • A—Street Range Address database. • U—Customer (user-defined) database.	A

International Postal Geocoding Result Codes (Z Codes)

Matches in the Z category indicate that a match was made at the postcode level. A postcode match is returned in either of these cases:

- You specified to match to postal code centroids. The resulting point is located at the postal code centroid with the following possible accuracy levels.
- There is no street level close match and you specified to fall back to postal code centroid.

Note: Not all postal geocoding result codes are possible for every country or for every database. For example, some countries will return a Z1 postal return only. Also, some countries do not have postal code data and therefore cannot return a Z result code.

Table 15: Postal (Z) Result Codes

Z Result Code	Description
Z1	Postal Code centroid match.
Z3	Full postal code centroid match.

Postal level geocoded candidates return a result code beginning with the letter Z. Africa can generate a Z1 result code. Country-specific geocoders can often generate more accurate postcode results (with Z2 or Z3 result codes).

International Geographic Geocoding Result Codes (G Codes)

Geographic level geocoded candidates return a result code beginning with the letter G. The numbers following the G in the result code provides more detailed information on the accuracy of the candidate.

Table 16: Geographic (G) Result Codes

G Result Code	Description
G1	State or province centroid. match.
G2	County (district or region) centroid match.
G3	City or town (municipality) centroid match.
G4	Locality (village, suburb, or neighborhood) centroid match.

Reverse Geocoding Codes (R Codes)

Matches in the R category indicate that the record was matched by reverse geocoding. The second two characters of the R result code indicate the type of match found. R geocode results include an additional letter to indicate the dictionary from which the match was made.

Example reverse geocoding codes:

Table 17: Reverse Geocoding (R) Result Codes

Reverse Geocoding Code	Description
RS8A	Point/parcel level precision for reverse geocoding. Candidate returned from address dictionary.
RS5A	Interpolated street candidate for reverse geocoding. Candidate returned from address dictionary.
RS4A	Street centroid candidate for reverse geocoding. Candidate returned from address dictionary.

Non-match Codes

The following result codes indicate no match was made:

- **N**—No close match.
- **NX**—No close match for street intersections.
- **ND**—Spectrum™ Technology Platform could not find the geocoding database for the given postal code or municipality/state/province.

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